

PALMER (A.B.)

SUGGESTIONS

ON THE

CAUSES AND TREATMENT

OF

INFLAMMATION OF INTERNAL ORGANS.

BY

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MEDICINE AND SURGERY, IN THE UNIVERSITY OF MICHIGAN, ETC.



ANN ARBOR:

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Mental activity and progress, the examination anew of the doctrines of the past, the breaking away from ancient traditions and maxims, and the upheaval of thought in which it takes new forms, constitute the leading characteristic of the present age. This characteristic pertains to regular medicine quite as much as to any other subject.

Should a physician, however advanced he might have been in the knowledge of his time, awake to-day from a sleep of twenty years, and should the lights or the shadows, the truths or the fictions, the facts or the fancies, the discoveries or the speculations, now prevalent, burst upon him, he would be as much surprised and bewildered as was Rip Van Winkle when he awoke from his nap and witnessed the social and material changes in the valley of the Hudson.

Inflammation, though the same pathological condition with which every physician, surgeon, obstetrician and specialist has had constantly to deal from the beginning of medicine to the present time, yet from the many facts respecting it which modern investigation has discovered, and modern thought and speculation have suggested, presents an aspect to the pathologist and therapist vastly different from that which it bore one hundred, or even twenty years ago.

I do not propose to trace the various changes of that aspect fully, but it may be well to give a few of the numerous names

and definitions which have been proposed by different writers and at different times, and which are suggestive of the manner in which it has been viewed.

The term inflammation indicates the burning heat which constitutes a visible feature, and the ancient definition of *rubor*, *tumor*, *calor et dolor* (redness, swelling, heat and pain) of a part, retained for generations until it became classical, was thought till near the present time to sufficiently indicate the nature of the diseased state. As seen by the superficial observer, this definition is still a correct picture of the ordinary external or more grossly perceived phenomena. But as the process began to be studied more minutely, and by the aid of modern instruments of precision and the exacting methods of modern thought, it has been proposed to call it by different names, and different definitions have been given. Stasis, from the stoppage of the circulation of blood in the part most affected; exudation, from the pouring out from the vessels of serum, pus, and lymph; cell-proliferation, from the rapid multiplication of cells; and change of nutrition, from the perversion of that vital process, etc., have been proposed as better names to designate its more essential nature. The original name and the classical definition, and all these more modern terms, give certain views of its phenomena.

But soon it came to be spoken of as a succession of changes in a living part, produced by some *injury*, but one which was not sufficient to destroy its vitality.

This injury it was found might be produced by various *irritants*—mechanical, chemical, or specifically poisonous; and the processes induced were found to be complex and varied, according to the character and amount of the irritant and the susceptibility of the patient, and of the part irritated or injured. These particular processes I do not now, in detail, propose even to name. But the last definition and theory of inflammation which has come to my notice I propose very briefly to sketch. This account, if found to be true, may tend to afford some explanation of the efficacy of the few items of treatment I propose to discuss.

J. Bland Sutton, F. R. C. S., assistant surgeon of the Middlesex Hospital, London, in the Erasmus Wilson Lectures recently delivered, says :

"Inflammation may be defined 'the method by which an organism attempts to render inert noxious elements introduced from without or arising from within.'" These noxious elements are called *irritants*, and are thought to be necessarily present when the process of inflammation is excited. Vascular disturbance results from these irritations, and the *white blood corpuscles* are declared to play a most important part in the inflammatory condition. These active motile cells have three functions which are brought into requisition in the inflammatory process.

1. Certain cells, among them the leucocytes, have the capacity to change their place and form.
2. They have the power of taking substances into their interior.
3. They are capable of decomposing organic material when taken into their protoplasm, or of performing intercellular digestion. Thus and otherwise they cause metabolic changes.

Metschnikoff, a Russian biologist, has made a particular study of this subject in the lower forms of animal life, and has found that some cells devour the dying elements of organs. Some receive bacteria into their interior and destroy them. They are even seen to pursue the bacteria, seize upon, envelop, and digest them.

It is alleged that tadpole's tails and gills, which so mysteriously disappear, are absorbed by amoeboid cells; that not only partly digested fragments of such tissues are found in the cells, but fragments of bacteria also, and that when a single cell is not strong enough or large enough to dispose of a bacterium, several will combine, surround the microbe, and uniting, subdue it, and then constitute a giant cell. These giant cells are eaters—"phagocytes"—as well as the smaller cells.

According to these assertions, based, it is said, upon microscopic observations, cells destroy various irritants introduced from without or developed from within. The process is physiological and

useful when moderate, and pathological and injurious when excessive. Much disturbance in the part and in the organism is produced when these processes are actively going on.

An inflammation is *simple*, or as I would say, non-specific, when reaction follows mechanical, thermal, or ordinary chemical irritants; *specific*, when particular poisons are the irritants, as the poison of variola, glanders, syphilis, and other infections. These poisons are organic, transferable, cultivatable, and, often at least, bacterial. It is possible, perhaps probable, that they induce changes of a chemical character in the body, producing *ptomaines*, or leucomaines, now coming into notice and becoming subjects of special study, which may play an important part, by poisoning the whole system, in the production of various diseases.

By the action of cells, it is alleged that noxious tissues are encapsulated and thrown out of the system, and that bacteria are thus expelled.

The author of the lectures referred to states that, read zoologically, in the light of the discoveries which are alleged to have been made, inflammation is a *battle*, and the contending parties are the wandering cells on the one side and the irritant materials on the other. The leucocytes are the *defending army*, the ordinary number in the healthy state the *standing army*. The roads are the blood vessels, and I would suggest the lymphatics are the waterways. When the organism is invaded by irritants of whatever kind—mechanical, chemical, ptomaines, leucomaines, organic, living bacteria, etc.,—a telegram is sent to *headquarters* by the vaso-motor nerves, the leucocytes assemble, and the standing army of them is recruited by a rapid multiplication of their numbers, often thirty-fold, in a short time. The defending cells of the system now become the attacking parties, and are slaughtered in the conflict as well as the invading enemy. As sometimes happens in the confusion of an engagement, those of the same party often fall upon each other. It is stated that the cells which are slain or suffer from the enemy are eaten by other cells. The slaughter is often so great as to obstruct the roads

and burden the field with the disabled or dead. There may be a burden of pus, and other products of the contest, to be cleared away.

The storm of a great battle devastates the locality where it occurs; the putrefying dead may breed a pestilence. The ravages of war are widespread. The resources of the country sustaining it are heavily taxed. It may be wiped out of existence or be no more known in the family of nations, or, if spared, may be long in recuperating its energies and repairing its wastes.

In the locality of this inflammatory battle the tissues are laid waste. The disabled and dead bodies of the contending parties are found in abundance. Bacteria are seen in different stages of destruction. The dead bodies of cells themselves become injurious. The battle-field becomes a breeding ground for more bacteria. When the battle has proceeded far, much time may be required to clear away the *débris*, or complete repair may be impossible. The death of the part or the whole organism may result.

This comparison may be said to be fanciful. It is so. It may be said there is a transition from sober fact into wild fiction—at least from scientific truth into speculation. But this is not the only instance in medicine where science merges into fanciful speculation, or where, upon a slender and perhaps doubtful foundation of facts, theories are erected. But speculation and theory often lead the way to substantial and important truth, and more frequently afford plausible explanations of indubitable facts.

That in inflammation a great commotion occurs, resulting when severe in more or less evil effects, we all know. In this process, that some *injury* is done to the part, which causes the phenomena, all are agreed. There are disturbing and apparently contending elements, and this view taken of its nature is not without plausibility.

According to this theory, whichever party is in the end victorious, the contest itself (which is the inflammation), though often resulting in surgical cases in repair of wounds and expul-

sion of foreign substances, is yet, when severe, and generally in medical cases, a great evil to be abated or subdued. Destruction or permanent impairment of the local or the whole organism is sadly frequent.

The most important question in therapeutics, indeed, in the art of medicine, is as to whether we have efficient means, and what are the best means, for controlling inflammation? Have we measures for destroying or expelling the intruding enemies or the irritating agents? A thorn in the flesh, or other gross foreign body, can often be extracted mechanically. A well known chemical irritant can often be neutralized by its antidote. Some specific poisons can be successfully expelled, overcome, or at least modified, in their actions. Others are obscure, concealed or unknown, or not to be safely reached by any means within our knowledge. In the battle we have supposed to exist, the destruction or expulsion of the enemy would end the contest, and, if early enough, repairs would soon be made.

But we cannot reach all microbes; we still know too little about "*ptomaines*" and "*leucomaines*" to combat them with intelligent precision, though there is the greatest reason to believe they act an important part in the production of many morbid states, and we are not sufficiently far advanced in the methods of successfully dealing with all the specific poisons.

When the enemy cannot be summarily expelled, have we any means of quieting the intensity of the raging battle, or commanding the fierce contest to cease? Are there any agents that can call a truce, or say with a potent voice, "let us have peace?" What is our knowledge on this subject, and how are we to obtain more?

A full answer to these questions, were it possible for me to make it, would require such time and labor as a waning life would scarcely afford. The present occasion will allow of only a few brief suggestions.

Experimental investigations in the laboratory upon animals, and observing the effects of different agents upon the healthy

human system, may throw great light upon various pathological and therapeutical questions; have indeed settled some of them, have suggested the use of various medicines in controlling disease, and have explained the known action of many others. But the test of all knowledge of curative processes is in clinical therapeutics—in observations at the bedside—in witnessing effects upon the actual states of disease. Here I am aware that appearances are often deceptive, and conclusions fallacious; but clinical observations, aided by experimental investigations and accompanied with philosophical reasoning and practical insight, are the best means we have in arriving at the truth.

Emphatically, from simple observation, we know that quinine, used in certain ways, possesses wonderful power in controlling the ague and the whole class of diseases we call malarial. The reason of such curative action, from simple bedside observation, cannot be told. Indeed, the method of its operation, after all the investigations to the present time, is still not fully known. But if it should be demonstrated that malarial diseases are produced by a particular cryptogamic germ—the *bacillus malariae* of Tommasi and Klebs—or any other similar organism, and that quinine destroys that organism, we should have a rational clue to the mode of its operation, at least in part, and our knowledge would become more philosophical and scientific, if not more positive.

We know also, by simple observation, that morphine, when applied to a part or introduced into the system, soothes irritation, allays pain, and generally produces sleep. We do not now, and never may know why or how such effect is produced. But both quinine and morphine produce other effects upon other and more complicated conditions and diseases, all of which we learn by careful and repeated observations.

From such observations, independent of any pathological knowledge or conjecture, of any reasoning or theories, I am prepared to express the belief, so confident in my mind, that it amounts with me to satisfactory knowledge, that quinine in suf-

ficient quantity, especially when combined with appropriate doses of morphine, given in the early stage of most acute inflammations, exerts upon the processes a wonderfully controlling influence. It often says to the supposed parties in this battle, "let us have peace." Whether the peace is conquered by subduing, expelling, or destroying the intruding enemy, or by soothing the parties and commanding a truce, or whether the remedies protect the field of battle from the usual ravages inflicted, I do not know. Whether the greater action of these agents is upon the irritant, upon the cells of the tissues concerned, upon the active moving cells or leucocytes, upon the nerves and vessels of the part, or upon the central nervous system, or in two or more of these ways, or, in fact, in some other way, are at present matters of conjecture. But the fact that under this treatment the inflammatory process is generally checked or arrested, is a matter of observation and knowledge.

I do not say that this treatment is always successful (we, perhaps, have no positive specifics in medicine), or that it is the best treatment in all cases; but I do say that quinine and morphine, properly used—boldly, yet cautiously—will exert what seems to me a wonderful influence over the early stages of most acute internal inflammations.

No absolute rule can be laid down as to doses and times of administration. These will vary in different cases, according to the locality and character of the inflammation, and the susceptibility of the patient. The quinine is less applicable to inflammations of the stomach than to those of other parts, and neither is as well adapted to inflammations of the brain as are some other remedies. But in pneumonia, pleurisy, peritonitis, metritis, tonsilitis, etc., free doses are well borne and are efficient.

From five to fifteen grains of quinine, with from one-sixth to one-third of a grain of morphine, are the quantities usually proper for the first dose, and subsequent doses, repeated once in from two to four hours, should be sufficiently large to keep up a relaxing, diaphoretic, antipyretic and anodyne effect. The morphine

may be continued or omitted, given in each or every second dose, according to the effect, or the condition of irritation or suffering, or of sopor present; but the quinine should be continued until from a scruple to a drachm has been given, and the inflammatory symptoms are allayed.

The quinine should then be suspended. Its continuance in large doses longer than twenty-four or thirty-six hours is not only unnecessary, but may be injurious. The brain may be seriously disturbed by its protracted action in these larger doses. A single alcoholic fit of intoxication may be soon recovered from, leaving only an inclination to its repetition, while a series of protracted debauches is liable to result in delirium tremens. Quinine, in free doses, may be well borne for a day or two, but, if longer continued, may produce mischief.

The administration of these doses may be preceded by an eliminative cathartic, if the secretions are already much perverted, or if the inflammation and fever have continued long enough to load the system with effete matters, the results of retrograde metamorphosis. But, if the doses are not preceded, they should be followed, by eliminatives—most important by cathartics, and often by diuretics, cholagogues and diaphoretics.

There are other medicines which operate in a somewhat similar manner to quinine, notably, salicylate of soda, and this article is even better adapted to rheumatic inflammation; and jaborandi, in doses sufficient to produce free diaphoresis and salivation, will often promptly check an incipient and even developed inflammation. Venesection in full blooded patients, and in various congestive conditions, and various other remedies, will aid in controlling inflammations, or in conducting patients through where the inflammation runs its course; but *the object of this paper is to call attention to quinine and morphine as anti-inflammatory agents*, especially to their power of arresting this process in its early stages.

This method of treatment has for years been my teaching and practice. Many of my former pupils are pursuing it in the dif-

ferent parts of the country and the world where they are scattered, and I am often cheered with the reports of their success.

I think, in the practice of all my colleagues in the university hospital, in attacks of acute inflammation, whether medical, surgical, or gynæcological, free doses of quinine and morphine are promptly given.

There have been various epochs in the history of modern medicine. The discovery of vaccination by Jenner is one; the promulgation of the doctrine of microbes as a cause of specific diseases by Pasteur, Koch, Lister and a host of others, is another. At present the most exciting subject is the cure of hydrophobia by inoculation with the diluted matter of rabies. Should this prove a success, as it has not yet done, it will be an epoch in our art. The bacteria doctrines have perhaps come to remain, but they have already their rival in the doctrine of Ptomaines and Leucomaines—the production of poisonous chemical substances, mostly basic (alkaloids), in decaying organic matters, in putrefying dead bodies, and in foods, causing ptomaines, and in the living organism, as the result of metabolic and other chemical transformations, causing leucomaines. It is held that the living being is constantly, or at least frequently, manufacturing in its tissues agents which, if not eliminated or in some way counteracted, are capable of producing disease and death.

We shall not hereafter be obliged to resort to what is often the fiction of exposure to cold and damp, or to the supposition of the presence of microbes, to account for attacks of inflammation—such as pneumonia, pleurisy, peritonitis, hepatitis, etc.; but we may say, and I believe we can often say with every probability of truth, that poisons manufactured in the system, which just now are called *leucomaines*, are the irritating materials which are producing the mischief. The production of these may or may not be excited by microbes, but they are chemical poisons. Indeed, the natural excretions, when retained or introduced into the blood or the tissues in excess, act as decided poisons. This has recently been fully demonstrated by injecting healthy urine

into the veins of animals, and the exact toxic power of this excretion has been estimated. The epoch of these doctrines is impending; and if established as true, if internal inflammations are produced by such substances, the positively curative medicines of the future are antidotes and eliminatives.

A most interesting question here arises, Is quinine an antidote to the poison which produces what are called spontaneous inflammations and accidental fevers, as it is believed to be to the poison which causes the ague? The solution of the subjects suggested in this paper awaits the future, but with the present scientific activity, that future may soon be upon us.

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